

1. A method comprising:
allowing a chemical or biological species, immobilized relative to a surface, to participate in a chemical or biological interaction; and
determining participation of the chemical or biological species in the chemical
5 or biological interaction by identifying an oligonucleotide identifier associated with the surface.
2. A method in claim 1, wherein the surface comprises gold.
- 10 3. A method as in claim 2, wherein the surface is a surface of a gold colloid particle.
4. A method as in claim 3, wherein the chemical or biological species is immobilized relative to the surface via a self-assembled monolayer.
- 15 5. A method as in claim 1, wherein the chemical or biological species is fastened to the surface via a metal binding tag/metal/chelate linkage.
6. A method as in claim 1, wherein, during the allowing step, the oligonucleotide
20 identifier is fastened to the surface, the determining step comprising separating the oligonucleotide identifier from the surface and then identifying the oligonucleotide identifier.
7. A method as in claim 6, wherein, during the allowing step, the oligonucleotide
25 identifier is fastened to the surface via a self-assembled monolayer.
8. A method as in claim 6, comprising identifying the oligonucleotide identifier via fluorescent sequencing.
- 30 9. A method as in claim 1, the allowing step comprising allowing a first species, fastened to a first surface, to biologically bind to a second species fastened to a second surface;

determining immobilization of the first surface relative to the second surface;
and

identifying the species fastened to the second surface by identifying an
oligonucleotide identifier which was fastened to the surface of the second article during
5 the allowing step.

10. A method as in claim 9, wherein each of the first and second articles is a colloid
particle.

10 11. A method as in claim 1, comprising identifying the oligonucleotide identifier by
identifying a complementary oligonucleotide having a first portion complementary to
the oligonucleotide identifier and a second portion complementary to a second
oligonucleotide identifier.

15 12. A method as in claim 1, comprising allowing a first chemical or biological
species, immobilized relative to a surface of a first article, to chemically or biologically
interact with a second chemical or biological species, immobilized relative to a surface
of a second article; and

20 determining the chemical or biological interaction by identifying an interaction
hybridization identifier that is complementary to a combination of a first
oligonucleotide identifier fastened to the surface of the first article and a second
oligonucleotide identifier fastened to the surface of the second article.

25 13. A method as in claim 12, comprising providing a first colloid particle, a first
species fastened to the first colloid particle, and a first oligonucleotide identifier
fastened to the first colloid particle, a second colloid particle, a second species fastened
to the second colloid particle, and a second oligonucleotide identifier fastened to the
second colloid particle;

30 allowing the first and second species to biologically bind, thereby immobilizing
the first and second colloid particles relative to each other and bringing the first
oligonucleotide identifier into proximity with the second oligonucleotide identifier;

exposing the first and second oligonucleotide identifiers to an interaction hybridization identifier that is complementary to the combination of the first and second oligonucleotide identifiers and allowing the interaction hybridization identifier to bind to the first and second oligonucleotide identifier; and

- 5 identifying the interaction hybridization identifier thereby identifying the first and second oligonucleotide identifiers and thereby identifying the biological binding.

14. A method as in claim 13 comprising, prior to the identifying step, de-activating any non-hybridized oligonucleotide.

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15. A kit comprising:
an article having a surface;
a chemical or biological species, able to participate in a chemical or biological interaction, fastened to or adapted to be fastened to the surface; and
15 an oligonucleotide identifier fastened to or adapted to be fastened to the surface.

16. A kit as in claim 15, wherein the article is a colloid particle.

17. A kit as in claim 15, wherein the article is a first article, the chemical or
20 biological species is a first chemical or biological species, and the oligonucleotide identifier is a first oligonucleotide identifier, further comprising:
a second article having a surface;
a second chemical or biological species, able to participate in a chemical or biological interaction, fastened to or adapted to be fastened to the second surface; and
25 a second oligonucleotide identifier fastened to or adapted to be fastened to the second surface.

18. A kit as in claim 17, wherein each of the first and second articles is a colloid particle.

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19. A kit as in claim 17, wherein each of the first and second chemical or biological species is fastened to or adapted to be fastened to the first or second surface, respectively, via a metal binding tag/metal/chelate linkage.

5 20. A kit as in claim 19, wherein each of the first and second chemical or biological species and first and second oligonucleotide identifiers is fastened to or adapted to be fastened to the first or second surface via a self-assembled monolayer-forming species.

10 21. A kit as in claim 17, further comprising an interaction hybridization identifier that is complementary to a combination of the first and second oligonucleotide identifier.

15 22. A kit comprising a plurality of particles each carrying a chemical or biological functionality allowing it to fasten to a binding partner, and each carrying an identical oligonucleotide linker constructed for attachment to a complementary oligonucleotide fastened to an oligonucleotide identifier.

20 23. A composition comprising:
a chemical or biological species, able to participate in a chemical or biological interaction;
a linker species that is not a ribosome; and
an oligonucleotide identifier, wherein each of the chemical or biological species and the oligonucleotide identifier is fastened to or adapted to be fastened to the linker species.

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24. A composition comprising:
a protein;
an linker species that is not a ribosome; and
an oligonucleotide identifier that encodes for the protein, wherein each of the
30 protein and the oligonucleotide identifier is immobilized relative to, or adapted to be immobilized relative to, the linker species.

25. A composition as in claim 24, wherein the linker species is a nanoparticle and each of the protein and the oligonucleotide identifier is immobilized relative to or adapted to be immobilized relative to a surface of the nanoparticle.

5 26. A composition as in claim 24, wherein the linker species is a chip and each of the protein and the oligonucleotide identifier is immobilized relative to or adapted to be immobilized relative to a surface of the chip.

10 27. A composition as in claim 24, wherein the linker species is a polymer and each of the protein and the oligonucleotide identifier is immobilized relative to or adapted to be immobilized relative to the polymer.

15 28. A composition as in claim 24, wherein the linker species is a dendrimer and each of the protein and the oligonucleotide identifier is immobilized relative to or adapted to be immobilized relative to the dendrimer.

20 29. A composition as in claim 24, wherein the linker species is a RNA binding protein and each of the protein and the oligonucleotide identifier is immobilized relative to or adapted to be immobilized relative to the RNA binding protein.

30. A composition as in claim 24, wherein the linker species is a DNA binding protein and each of the protein and the oligonucleotide identifier is immobilized relative to or adapted to be immobilized relative to the DNA binding protein.

25 31. A composition as in claim 24 further comprising a chimeric oligo solution that is complimentary to both the oligonucleotide identifier that encodes for the protein and a second oligonucleotide identifier that encodes for a binding partner of the protein.

30 32. A kit comprising:
a surface;
a protein immobilized relative to the surface or adapted to be immobilized relative to the surface; and

an oligonucleotide identifier that codes for the protein, immobilized relative to the surface or adapted to be immobilized relative to the surface.

5 33. A kit as in claim 32, wherein at least a portion of the surface is coated with a self-assembled monolayer.

34. A kit as in claim 33, wherein each of the oligonucleotide identifier and protein is immobilized or adapted to be immobilized relative to the common surface via the self-assembled monolayer.

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35. A kit as in claim 32, wherein the surface is a surface of a recruitable particle.

36. A kit as in claim 32, wherein the surface is a surface of a magnetic bead.

15 37. A kit as in claim 32, wherein the surface is a surface of a colloid particle.

38. A kit as in claim 32, wherein the surface is a surface of a chip.

20 39. A kit as in claim 32, wherein the oligonucleotide identifier is hybridized or hybridizable to an oligonucleotide sequence that is fastened to or adapted to be fastened to the surface.

40. A kit as in claim 39, wherein the oligonucleotide identifier is hybridized or hybridizable to an oligonucleotide sequence that forms part of a self-assembled monolayer fastened to the surface.

41. A kit as in claim 32, wherein the oligonucleotide identifier comprises plasmid DNA.

30 42. A kit as in claim 32, wherein the oligonucleotide identifier comprises a protein expression vector.

43. A kit as in claim 32, wherein the oligonucleotide identifier comprises linear DNA.

5 44. A kit as in claim 43, wherein the oligonucleotide identifier comprises a protein expression template.

45. A kit as in claim 43, wherein the oligonucleotide identifier comprises a product of a polymerase chain reaction.

10 46. A kit as in claim 45, wherein the oligonucleotide identifier comprises a protein expression template.

15 47. A kit as in claim 32, wherein the oligonucleotide identifier comprises a protein expression template.

48. A kit as in claim 32, wherein the oligonucleotide identifier is immobilized to or adapted to be immobilized to the surface via a nucleic acid binding protein.

20 49. A kit as in claim 32, wherein the oligonucleotide identifier is modified to facilitate attachment to the surface via a recognition protein.

50. A kit as in claim 32, wherein the oligonucleotide identifier is biotinylated to facilitate attachment to the surface via streptavidin.

25 51. A kit as in claim 47, wherein the oligonucleotide identifier is immobilized to or adapted to be immobilized to the surface via a DNA binding protein.

30 52. A kit as in claim 32, further comprising a signaling entity immobilized relative to or adapted to be immobilized relative to at least one of the oligonucleotide identifier and protein.

53. A kit as in claim 52, wherein the oligonucleotide identifier is modified to include a signaling entity.

54. A kit as in claim 53, wherein the oligonucleotide identifier is generated via PCT
5 using primers modified with signaling entities.

55. A kit as in claim 32, wherein the oligonucleotide identifier comprises PCR sites.

56. A kit as in claim 32, wherein the protein immobilized relative to the surface or
10 adapted to the immobilized relative to the surface is expressed off of the
oligonucleotide identifier.

57. A kit comprising:
a polymer or dendrimer;
15 a protein immobilized relative to the polymer or dendrimer or adapted to be
immobilized relative to the polymer or dendrimer; and
an oligonucleotide identifier that codes for the protein, immobilized relative to
the polymer or dendrimer or adapted to be immobilized relative to the polymer or
dendrimer.

58. A composition comprising:
a protein and an oligonucleotide identifier that codes for the protein,
immobilized relative to each other or adapted to be immobilized relative to each other.

59. A kit comprising:
a protein and an oligonucleotide identifier that codes for the protein,
immobilized relative to each other or adapted to be immobilized relative to each other;
and
an entity carrying immobilized thereto a binding partner of the protein.

60. A kit as in claim 59, wherein the entity is capable of carrying immobilized
thereto a plurality of binding partners of the protein.

61. A kit as in claim 59, wherein the entity carries immobilized thereto a plurality of binding partners of the protein.

5 62. A kit as in claim 59, wherein the entity is a recruitable particle.

63. A kit as in claim 59, wherein the entity is a magnetic bead.

64. A kit as in claim 59, wherein the entity is a colloid particle.

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65. A kit as in claim 59, wherein the entity is a surface of a chip.

66. A kit as in claim 59, further comprising an oligonucleotide identifier immobilized to or adapted to be immobilized to the binding partner.

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67. A kit as in claim 59, wherein the protein is a fusion protein.

68. A kit as in claim 66, wherein the protein comprises a binding partner and an affinity tag.

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69. A method comprising:
expressing a protein with an oligonucleotide;
immobilizing the protein and the oligonucleotide relative to each other.

25 70. A method as in claim 69, wherein each of the oligonucleotide identifier and protein is immobilized or adapted to be immobilized relative to a common surface.

71. A method as in claim 70, wherein at least a portion of the surface is coated with a self-assembled monolayer.

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72. A method as in claim 71, wherein each of the oligonucleotide identifier and protein is immobilized or adapted to be immobilized relative to the common surface via the self-assembled monolayer.

5 73. A method as in claim 69, wherein the surface is a surface of a recruitable particle.

74. A method as in claim 73, wherein the surface is a surface of a magnetic bead.

10 75. A method as in claim 73, wherein the surface is a surface of a colloid particle.

76. A method as in claim 69, wherein the surface is a surface of a chip.

15 77. A method as in claim 69, wherein each of the oligonucleotide identifier and protein is immobilized or adapted to be immobilized relative to a common polymer.

78. A method as in claim 69, wherein each of the oligonucleotide identifier and protein is immobilized or adapted to be immobilized relative to a common dendrimer.

20 79. A method as in claim 70, wherein the oligonucleotide identifier is hybridized or hybridizable to an oligonucleotide sequence that is fastened to or adapted to be fastened to the surface.

25 80. A method as in claim 69, wherein the oligonucleotide identifier comprises plasmid DNA.

81. A kit as in claim 69, wherein the oligonucleotide identifier comprises a protein expression vector.

30 82. A method as in claim 69, wherein the oligonucleotide identifier comprises linear DNA.

83. A kit as in claim 82, wherein the oligonucleotide identifier comprises a protein expression template.

84. A kit as in claim 82, wherein the oligonucleotide identifier comprises a product
5 of a polymerase chain reaction.

85. A kit as in claim 84, wherein the oligonucleotide identifier comprises a protein expression template.

10 86. A method as in claim 70, wherein the oligonucleotide identifier is immobilized to or adapted to be immobilized to the surface via a nucleic acid binding protein.

87. A method as in claim 86, wherein the oligonucleotide identifier is immobilized to or adapted to be immobilized to the surface via a DNA binding protein.
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88. A method as in claim 69, wherein the oligonucleotide identifier and protein are immobilized to or adapted to be immobilized relative to each other in the absence of a common surface to which each is immobilized.

20 89. A method as in claim 88, further comprising a signaling entity immobilized relative to or adapted to be immobilized relative to at least one of the oligonucleotide identifier and protein.

90. A method as in claim 88, further comprising exposing the protein to an entity
25 carrying immobilized thereto a binding partner of the protein.

91. A method as in claim 90, comprising exposing the protein to an entity capable of carrying immobilized thereto a plurality of binding partners of the protein.

30 92. A method as in claim 90, comprising exposing the protein to an entity carrying immobilized thereto a plurality of binding partners of the protein.

93. A method as in claim 90, wherein the entity is a recruitable particle.
94. A method as in claim 90, wherein the entity is a magnetic bead.
- 5 95. A method as in claim 90, wherein the entity is a colloid particle.
96. A method as in claim 90, wherein the entity is a surface of a chip. .
97. A method as in claim 90, further comprising an oligonucleotide identifier
10 immobilized to or adapted to be immobilized to the binding partner.
98. A method as in claim 69, wherein the protein is a fusion protein.
99. A method as in claim 98, wherein the protein comprises a binding partner and
15 an affinity tag.
100. A method as in claim 98, further comprising a signaling entity immobilized
relative to the protein and the oligonucleotide identifier.
- 20 101. A method as in claim 100, wherein the signaling entity is part of the fusion
protein.
102. A method comprising:
allowing a chemical or biological species to participate in a chemical or
25 biological interaction; and
determining participation of the chemical or biological species in the chemical
or biological interaction by identifying an oligonucleotide identifier, wherein the
oligonucleotide identifier encodes the chemical or biological species.
- 30 103. Generating a library of nucleic acids that contain components of a cDNA library
and a functionality to facilitate binding to a surface.
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104. Generating a library of nucleic acids that contain components of a cDNA library and a functionality the products of which are used in an in vitro assay.

105. Generating a library of nucleic acids that contain components of a cDNA library
5 and sequences to which nucleic acid binding proteins bind.

106. Generating a library of plasmids that contain components of a cDNA library and a functionality to facilitate binding to a surface.

10 107. Generating a library of plasmids that contain components of a cDNA library and a functionality the products of which are used in an in vitro assay.

108 Generating a library of plasmids that contain components of a cDNA library and sequences to which nucleic acid binding proteins bind.

15 109. Generating a library of nucleic acids or plasmids that contain components of a cDNA library, sequences that encode a DNA binding domain and sequences to which the encoded DNA binding domain binds.

20 110. Generating a library of nucleic acids or plasmids that contain components of a cDNA library, sequences that encode a DNA binding domain and sequences to which the encoded DNA binding domain binds, wherein the binding motif sequences are not in proximity to a reporter gene.

25 111. A kit comprising:
at least one colloid particle;
at least one magnetic bead;
at least one protein recognition motif adapted for immobilization to the at least one colloid particle; and
30 an uncharacterized protein or drug adapted for immobilization to the at least one bead.

112. The kit of claim 111 further comprising DNA adapted for immobilization to the at least one bead.

113. The kit of claim 112 wherein the DNA encodes for the uncharacterized protein.

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114. A method comprising:

exposing a plurality of colloid particles, each carrying an immobilized protein recognition motif, to a bead carrying an immobilized, uncharacterized protein or drug; and

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determining immobilization of at least one particle to the bead via interaction between the protein recognition motif and the uncharacterized protein or drug.

115. A method as in claim 114, further comprising determining the identity of the uncharacterized protein or drug by determining which protein recognition motifs it binds to.

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116. The method of claim 115 wherein the presence of an unknown protein or drug is determined by detecting an identifier attached to the bead, the identifier corresponding to the uncharacterized protein or drug.

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117. The method of claim 116 wherein the identifier is DNA.

118. The method of claim 117 wherein the DNA encodes for the uncharacterized protein.

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